

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION.

### Inhaler.

I, JONASSEN, BENJAMIN, of  
 Wiesbaden, in the Free State of Prussia,  
 Germany, of German nationality, do  
 hereby declare the nature of this inven-  
 tion and in what manner the same is to  
 be performed, to be particularly described  
 and ascertained in and by the following  
 statement:—

This invention relates to an inhaler  
 with an air compressor which consists of  
 two chambers through which the fresh  
 air flows under pressure, one of said  
 chambers being constructed to form a  
 heatable water receptacle for the pro-  
 duction of hot moist air, the other  
 chamber being constructed to form a cool-  
 ing or refrigerating device for the pro-  
 duction of cold dry air and means being  
 provided for alternating inhalation of  
 cold air and then of hot air.

In apparatus of this kind according to  
 the present invention the refrigerator is  
 composed of two parts, one of these in  
 form of an annular receptacle and one of  
 cylindrical shape, the latter one com-  
 prising a bell which dips into said  
 annular receptacle. The cylindrical  
 receptacle is situated in the open part of  
 the annular receptacle and the walls of  
 these two parts contain a very small  
 number of grooves through which the air  
 to be cooled is forced, whilst the dip bell  
 contains a space above the two parts in  
 which the compressed air is collected.

In this manner it is possible to ensure  
 that the air to be inhaled is sufficiently  
 cooled to a low temperature although it  
 has only a short travel to make through  
 the apparatus and is exposed to the cool-  
 ing action only for a very short time.

The invention further consists in pro-  
 viding means for producing the com-  
 pressed air in a simple manner so that  
 the apparatus can be used by any un-  
 skilled person.

(Type 1/1)

The drawing illustrates the invention  
 in two forms of construction.

Fig. 1 shows in vertical section the  
 apparatus with a dip bell as air com-  
 pressor.

Fig. 2 shows in vertical section the  
 apparatus with a water jet mover built  
 in serving as air compressor.

A receptacle 1 for water heated in a  
 convenient manner and an inverted cylin-  
 der 2 mounted in the same axis of the  
 steam chamber 3. An annular recep-  
 tacle 4 and a second receptacle 5 with a  
 projecting dip bell 6 dipping into said  
 annular receptacle 4 form together the  
 cooler which is separated from the heated  
 receptacle by an insulating partition 7. Any  
 other expedient arrangement of the  
 two chambers may be chosen.

The compressed air produced in a  
 manner which will be described hereafter  
 flows from the supply pipe 10 into the in-  
 truding tube 11 and from there on the  
 one hand under the bell 6 and further  
 into the space between the walls of the  
 two cooling receptacles, the inner of  
 these two receptacles being slightly  
 guided in the entry by means of guide  
 ribs 7, to the tubular socket 17 into the  
 aspirating pipe for cold dried air and on  
 the other hand into the steam chamber  
 3 and to the tubular socket 18 for hot  
 moist air.

The cooling receptacles are filled with  
 ice or with water of such a temperature  
 which is required for the individual  
 demand. A horizontal sieve 9 at the  
 lower edge of the dip bell can be used for  
 this purpose in order to keep the ice frag-  
 ments down when a specially cold tem-  
 perature is required. A very dry air of  
 moderate temperature can be further  
 produced if the inner receptacle is filled  
 with a cold conducting mixture the outer  
 receptacle being filled with water. Any

production can be obtained as regards  
 degree of cold or dryness. For the heat-  
 ing chamber the regulation by heating is  
 sufficient.

Each aspirating pipe has a removable  
 separator 15 for the reception of specim-  
 ens of the value of condensation and  
 further a thermometer. The aspirating  
 pipes are connected by means of rubber  
 tubes and when not in use they are closed  
 in a holder 19 so that the rubber tube is  
 squeezed. Instead of one aspirating  
 nozzle several such nozzles can be pro-  
 vided so that several patients can use one  
 apparatus.

The description given relates to both  
 forms of construction. For the produc-  
 tion of air under pressure, which could  
 be effected *per se* in any convenient  
 manner, a dip bell 22 is provided accord-  
 ing to Fig. 1 which is tightly guided in  
 a receptacle 21 and which is adapted to  
 take up in an upper space 23 water bal-  
 last in order to regulate the pressure  
 accurately. To be filled the bell is lifted  
 whereby the flap valve 24 is opened. The  
 compressed air flows through a flexible  
 tube 25 to the suction and pressure nozzle  
 26 of the above mentioned supply tube  
 10 so that a multiple of the filling of the  
 dip bell is worked into the apparatus so  
 that the dip bell can be built as a pro-  
 ducer of high pressure, a corresponding  
 amount of space being saved. It is pos-  
 sible of such dimensions that one fill-  
 ing determines also the time prescribed  
 for the inhalation so that the aspirating  
 tubes have to be changed each time when  
 the bell is raised.

According to Fig. 2 the inner cooling  
 receptacle is constructed so that it serves  
 at the same time as a water jet injector  
 from which the air jet is led through con-  
 duct 21 to a like suction and pressure

nozzle 26 as used according to Fig. 1,  
 now however mounted with the supply  
 pipe 10 in the dip bell 8 and forcing the  
 air within the space confined by the dip  
 bell and the water level in the annular  
 receptacle 6 as well as in the cham-  
 ber 3. In the top part of the dip bell 8  
 a water receptacle is arranged which  
 serves as ballast to keep the receptacle 6  
 at the lowest position shown in Fig. 2.

The water from the water main flows  
 through the nozzle 28 in a sharp jet  
 through the central pipe 27, drawing  
 along the outer air through the opening  
 29 into the cylinder 6 and escaping  
 30 through the suction tube 10, from  
 which it may be drawn off by a rubber

tube not shown in the drawing. A pre-  
 venting plate 29 prevents air bubbles  
 from getting into the suction tube.

Having now particularly described and  
 ascertained the nature of my said inven-  
 tion and in what manner the same is to  
 be performed, I declare that what I  
 claim is:—

1. Inhaler with air compressor con-  
 sisting of two chambers through which  
 the fresh air flows under pressure, one of  
 said chambers being constructed to form  
 a heatable water receptacle for the pro-  
 duction of hot moist air, the other cham-  
 ber being constructed to form a refriger-  
 ating device characterized in that for the  
 production of the cold dry air a refriger-  
 ator in cylindrical shape is provided  
 which has a bell at its upper end dipping  
 into the annular space of a second  
 receptacle built like an annular recep-  
 tacle, the compressed air being delivered  
 under said dip bell.

2. Inhaler as claimed in Claim 1 char-  
 acterized in that the lower edge of the  
 dip bell of the inner cooling receptacle  
 is provided with a horizontal perforated  
 ring of sheet-metal or with a sieve which  
 keeps the ice fragments down in the  
 annular space.

3. Inhaler as claimed in Claim 1 char-  
 acterized in that an adjustable loaded  
 dip bell like a pressure valve or air  
 compressor, said dip bell being raised in  
 order to be filled working to fresh air  
 through a flap valve, the compressed air  
 being applied to the two chambers by a  
 suction and pressure nozzle inserted  
 between said chambers and said air com-  
 pressor.

4. Inhaler as claimed in Claim 1 char-  
 acterized in that a water jet injector  
 serves for producing the compressed air.

5. Inhaler as claimed in Claim 4 char-  
 acterized in that the water jet injector is  
 mounted in the dip bell.

6. Inhaler as claimed in Claim 4 and  
 5 characterized by a tube for the extra-  
 and air jet extending vertically deeply  
 into the collecting space for compressed  
 air but terminating above a preventing  
 plate and by an suction tube under the  
 preventing plate for the outflow of the  
 water.

Dated this 18th day of April, 1921.

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